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# A Review on Chatbot for an Educational Institute

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**ABSTRACT:** Most of the time, Students need to visit college administration office to collect various information regarding college such as Tuition fees, Term Schedule, etc. during admission process or as per their daily needs. Hence, to overcome this problem, a chatbot can be designed and developed which can be easily integrated with any college website to provide necessary information regarding college. The goal of chatbot is to make an efficient conversation between human and machine via auditory or textual methods. This project uses Natural language processing to process the user's query and generate a meaningful response. Based on the information stored in the database, bot itself determines appropriate response of a particular query fired by user. The Chatbot is based on an Artificial Intelligence algorithm, which analyses user's question and responds. This system reduces work of college administration providing information to students. It also reduces the workload on the staff to answer all the queries of the students.

**KEYWORDS:** Chatbot, Query, Graphical User Interface, Natural Language Processing, Artificial Intelligence, Whatsapp API.

## I. INTRODUCTION

In today's digital age, educational institutions are leveraging technology to enhance communication, engagement, and efficiency in their operations. One such technological innovation is the implementation of WhatsApp chatbots. WhatsApp chatbots for educational institutes are intelligent conversational agents that are integrated into the popular messaging platform, WhatsApp, to provide a wide range of services and support to students, parents, and staff. These chatbots are designed to facilitate instant and personalized interactions, offering a convenient and accessible means of accessing information, assistance, and resources.

The Idea behind this system that is "WhatsApp chatbot for GCOERC" is that we're providing a messaging platform through WhatsApp in which students can interact with the system to retrieve the answer of the query which is related to college. The user will get the response of the query he had directly through WhatsApp. So we are developing this system specifically for Guru Gobind Singh College Of Engineering. Most of the time, Students need to visit college to collect various information regarding college such as Tuition fees, Term Schedule, Department related information etc. Also, Many of the time students hesitate to ask the query to the staff. Hence, to overcome this problem, a chatbot can be designed and developed which will answer all the college related query to the user and it can be integrated with WhatsApp.

## II. RELATED WORK

Prof.K.Bala, Mukesh Kumar, Sayali Hulawale, Sahil pandita. "Chat-Bot For College Management System Using A.I." Published in International Research Journal of Engineering and Technology (IRJET), ISSN: 2395-0056, Volume: 04 Issue: 11, Nov -2017, The paper discusses, the chatbot will give answers to the analysed queries of the user. Users will simply need to select the class for queries and ask the question to the bot. They have used Porter Stemming

algorithm. The Users should register and login to the system. Once login, user can access the various helping pages through which the user can ask queries related to college activities. [1].

Anupam Mondal, Monalisa Dey, Dipankar Das, Sachit Nagpal, Kevin Garda. "Chatbot: An automated conversation system for the educational domain" Published in (IEEE), Issue: 2018, The paper discusses , This educational chatbot uses advanced natural language processing techniques, feature extraction, and an ensemble learning model (random forest) to classify and generate responses. The validation results indicate that the chatbot performs well in classifying and responding to user queries. [2]

Kumar Shivam, Khan Saud, Manav Sharma, Sheetal Patil. "Chatbot for College Website" Published in IJCAT - International Journal of Computing and Technology, ISSN: 2348-6090, Volume 5, Issue 6, June 2018, The paper discusses, for designing chatbot, Facebook Messenger is used which is source. This Facebook API is integrated with Python backend. This system has used WIT and AI as a pre-trained AI module so that one could use its pre-trained neural networks to answer the user's query. [3]

Vishal R. shinde, Anagha Bagul, Amit Gupta, Sneha Javeri. "Chatbot for college related FAQs" Published in International Journal for Research in Engineering Application and Management (IJREAM), ISSN: 2454-9150, Issue July 2019, This paper has provided the scheme of a chatbot, that delivers an resourceful and precise answer for any query built on the dataset of FAQs by means of Artificial Intelligence Markup Language (AIML). [4]

Akshay Kumar, Pankaj Kumar Meena, Debiprasanna panda, Ms.Sangeetha. "CHATBOT IN PYTHON" Published in International Research Journal of Engineering and Technology (IRJET), ISSN: 2395-0056, Volume: 06 Issue: 11, Nov 2019, This techniques presents a chatbot design using Artificial Intelligence Markup Language (AIML) and Latent Semantic Analysis (LSA) on the Python platform, aiming to provide accurate and authentic responses to user queries, further enhancing the capabilities of chatbots in various applications. [5]

M. Nithisha Reddy, S. Manaswini Reddy, A. Yadhu Vamsh, K. Neeraj Reddy. "Research Paper on Chatbot for Student Admission Enquiry" Published in HBRP Publication, Volume 3 Issue 1 ,2020, The paper presents a chatbot for student admission inquiries using Rasa NLP and Dialogflow, powered by machine learning. It highlights chatbots as efficient AI-driven assistants deployed on Facebook Messenger and Skype, using NLP. [6]

Shilpa Katore, Priya Shid, Shruti Kale, Prof. Bharati Kudale. "College Enquiry Chat bot using Python" Published in IJSRD - International Journal for Scientific Research and Development, ISSN: 2321-0613, Volume: 9, Issue 4, 2021, In this Paper, the key technologies and libraries include Python as the primary language, NLP tools like NLTK for text processing, and AIML for structuring chatbot responses. [7]

Achmad Ramaditya, Suci Rahmatia, Aris Munawar, Octarina Nur Samijayani. "Implementation chatbot WhatsApp using python Programming for Broadcast and Reply Message Automatically" Published in IEEE, Issue 2, Sep 2021, This paper focused on using the WhatsApp application for the Chatbot system. This Chatbot system uses the Python programming language and Rasbery pi. [8]

Shivani Rashinkar, Neha Wanjol, Shivani Rane, Pushkar Shinde. "Design of Chatbot System for College Website" Published in IJCSE, ISSN: 2347-2693, Volume: 9 Issue: .7, July 2021, The chatbot system is based on an artificial intelligence algorithm and uses natural language processing to process user queries and generate meaningful responses. The system can provide information about college-related activities such as admission process, contact information, address, intake, and other cultural activities of colleges. [9]

V. M. Nithisha Reddy, S. Manaswini Reddy, A. Yadhu Vamshi, K. Neeraj Reddy, B. Dhanunjay, Dr. S. Venu Gopal. "WHATSAPP CHATBOT FOR CAREER GUIDANCE" Published in International Research Journal of Engineering and Technology (IRJET), ISSN: 2395-0056, Volume: 09 Issue: 10 , Oct 2022, This techniques uses Flask to handle user interactions and generate responses, Twilio for communication via WhatsApp, and ngrok to expose the Flask application running locally to the internet. Users can engage with the WhatsApp bot to receive career-related information and guidance based on their chosen profession. [10]

### III.SYSTEM ARCHITECTURE

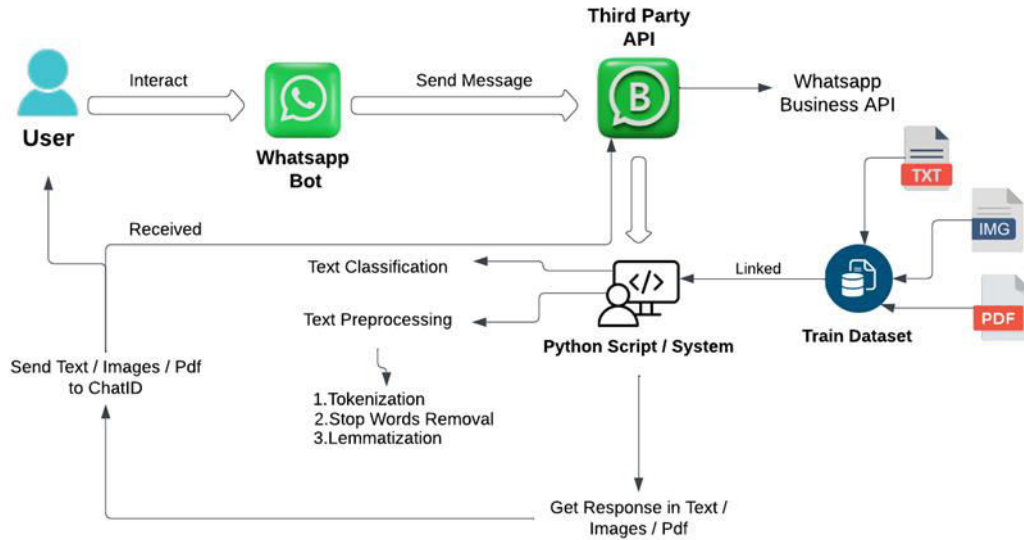


Fig.3.1 System Architecture

In our system, the user interacts or sends the message to the WhatsApp bot, then the WhatsApp bot sends the message to the third party API. The third party API will fetch the information and text from the Python script. The information will be retrieved from following operations such as Text classification and text preprocessing. Then after information retrieval, the information is sent to the user in the form of text/pdf or images.

Example of how the process might work in practice:

1. The user opens a web interface that allows them to interact with the chatbot.
  2. The user types a message into the web interface and clicks the "Send" button.
  3. The web interface sends the user's message to the chatbot's server.
  4. The chatbot's server performs text classification on the message to determine what type of message the user is sending.
  5. The chatbot's server performs text preprocessing on the message to clean it up and make it easier to understand.
  6. The chatbot's server sends the message to the WhatsApp Business API.
- The WhatsApp Business API delivers the message to the user's WhatsApp account.

The chatbot can then respond to the user's message in the same way. The chatbot can send text messages, images, videos, and other types of content to the user.

### IV.NLP

In the context of a chatbot application for a college enquiry system, tokenization, lemmatization, and stop word removal are important natural language processing (NLP) techniques that help in processing and understanding user input.

#### i. Tokenization:

Tokenization is the process of breaking down a text into smaller units, known as tokens. Tokens are typically words or phrases.



- Role in Chatbots: In a chatbot application, tokenization is crucial for understanding and analyzing user input. It helps in breaking down the user's message into individual words or phrases, making it easier to process and interpret.

ii. **Lemmatization:**

- Lemmatization is the process of reducing words to their base or root form. It involves transforming words to their dictionary or canonical form.

- Role in Chatbots: Lemmatization is important for standardizing words, reducing them to their base forms. This helps in improving the accuracy of understanding user queries. For example, "running" and "ran" would both be lemmatized to "run."

iii. **Stop Word Removal:**

- Stop words are common words that often do not contribute significant meaning to a sentence, such as articles, prepositions, and conjunctions.

- Role in Chatbots: Removing stop words is beneficial for focusing on the essential content of a user's message. By filtering out words that don't carry much meaning, the chatbot can prioritize and better understand the user's intent. For example, in the sentence "What are the admission requirements for computer science?", stop words like "what," "are," "the," and "for" might be removed.

## V. CONCLUSION

Our proposed system is to help the students to get information about their college activities and to post their admission-related queries on the go from anywhere, even outside the college. Another main motive is to reduce the workload on the college staff and reduce the response time for a user queries. For this, we have proposed a mobile based chatbot system with the NLP based techniques. It had almost 99 percent accuracy score in giving appropriate responses to the users for their queries. The performance as well as accuracy is very considerable for our chatbot system along with very small response time. In future, using AI/ML/Chatterbot, chatbots can provide students with learning material in an interactive manner on any topic, help them learn quicker through images, pdf ,text documents.

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